WHAT IS CLAIMED IS:

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1.   A method coding a moving picture using a plurality of blocks, comprising the steps of:

selecting a plurality of pixels positioned around a block boundary;

obtaining frequency information for each of the plurality of pixels;

adjusting a discontinuous component in a frequency domain of a first pixel of the plurality of pixels located at the block boundary based on a corresponding component in the frequency domain of a second pixel of the plurality of pixels near the block boundary; and

applying the adjusting operation to a spatial domain of the first pixel to reduce a blocking artifact.

2.   The method according to claim 1, wherein the selecting through applying steps are performed in a first mode.

3.   The method according to claim 1, wherein a magnitude of the discontinuous component in the first pixel is adjusted to a magnitude of the corresponding component in the second pixel, wherein the magnitude of the corresponding component in the second

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pixel is based on a smallest value of corresponding component magnitudes in remaining pixels of the plurality of pixels.

4. The method according to claim 3, wherein the adjusting step satisfies at least one of the following conditions:

$v_3' = v_3 - d$; and

$v_4' = v_4 + d$; where $d = CLIP(c_2(a_{3,0}' - a_{3,0})//c_3, 0, (v_3 - v_4)/2)*\delta(|a_{3,0}|\langle QP\rangle$,

$a_{3,0}' = SIGN(a_{3,0})*MIN(|a_{3,0}|, |a_{3,1}|, |a_{3,2}|)$, wherein $v_3 - v_4$ are initial boundary pixel values, $v_3' - v_4'$ are adjusted boundary pixel values, $a_{3,0} - a_{3,2}$ are the discontinuous component of the discrete cosine transform coefficients of the first and second pixels, c_2 and c_3 are DCT kernel coefficients and QP is a quantization parameter of a macroblock containing v_4.

5. The method according to claim 3, wherein the remaining pixels of the plurality of pixels are positioned within a block adjacent the block boundary.

6. The method according to claim 1, further comprising:

determining a smoothness level of the plurality of pixels; and

selecting one of a first and a second mode based on the smoothness level, wherein the blocking artifact is reduced based on the selected mode.

7. The method according to claim 6, wherein the second mode is selected when the following condition is satisfied: $((v_0 == v_1 \&\& v_1 == v_2 \&\& v_2 == v_3 \&\& v_4 == v_5 \&\& v_5 == v_6 \&\& v_6 == v_7)$, wherein v_0 - v_7 are boundary pixel values.

8. The method according to claim 6, wherein in the second mode is selected for a region of the motion picture where there is little motion.

9. The method according to claim 8, wherein the adjusting step prevents over-smoothing when the blocking artifact is not very serious and counts an effect of a quantization parameter.

10. The method according to claim 6, wherein the adjusting step in the second mode satisfies at least one of the following conditions:

$$v_3' = v_3 - d;$$

$$v_4' = v_4 + d;$$

$$v_2' = v_2 - d_2;$$

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$$v_5' = v_5 + d_2;$$

$$v_1' = v_1 - d_3; \text{ and}$$

$$v_6' = v_6 + d_3, \text{ where } d_1 = (3(v_3 - v_4)//8)*\delta(|a_{3,0}|\langle QP \rangle),$$

$$d_2 = (3(v_3 - v_4)//16)*\delta(|a_{3,0}|\langle QP \rangle), \text{ and}$$

$$d_3 = (3(v_3 - v_4)//32)*\delta(|a_{3,0}|\langle QP \rangle), \text{ wherein } v_0 - v_7 \text{ are}$$

initial boundary pixel values, $v_1' - v_6'$ are adjusted boundary pixel values, $a_{3,0}$ is the discontinuous component of the discrete cosine transform coefficients of the first pixel and QP is a quantization parameter of a macroblock containing v_4.

11.   The method according to claim 1, wherein the obtaining frequency information step uses a 4-point discrete cosine transform (DCT) kernel.

12.   The method according to claim 11, wherein the plurality of pixels includes $S_0, S_1,$ and S_2 pixels centered around the block boundary, and wherein corresponding DCT coefficients are determined by an inner product of the DCT kernel and the pixels, $S_0, S_1,$ and S_2.

13.   The method according to claim 1, wherein the plurality of pixels are centered around the block boundary.

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14.   The method according to claim 1, wherein a first mode is a default mode and a second mode is a DC offset mode.

15.   A method of reducing a blocking artifact for use in coding a moving picture, comprising the steps of:

defining at least first, second and third pixels around a block boundary;

setting a default mode, if the default mode is selected;

obtaining frequency information for each of the pixels;

adjusting a magnitude of a discontinuous component in a frequency domain belonging to the block boundary to the minimum value of a magnitude of a discontinuous component in a frequency domain around the block boundary, and applying a result of the frequency domain adjusting operation to a spatial domain;

setting a DC offset mode, if a DC offset mode is selected; and

reducing the blocking artifact in at least one of the default mode and the DC offset mode.

16.   The method according to claim 15, wherein the magnitude of the discontinuous component in the first pixel is adjusted to the minimum value of the magnitude of corresponding components in one of the second and third pixels, wherein

the first pixel is located at the block boundary and the second and third pixels are located

around the block boundary.

17. The method according to claim 16, wherein the adjusting steps in the default mode are:

$$v_3' = v_3 - d; \text{ and}$$

$$v_4' = v_4 + d; \text{ where } d = CLIP \left(c_2(a_{3,0}' - a_{3,0})//c_3, 0, (v_3 - v_4)/2\right) * \delta(|a_{3,0}|(QP),$$

$$a_{3,0}' = SIGN(a_{3,0}) * MIN(|a_{3,0}|, |a_{3,1}|, |a_{3,2}|), \text{ wherein } v_3 -$$

v_4 are initial boundary pixel values, $v_3' - v_4'$ are adjusted boundary pixel values, $a_{3,0} - a_{3,2}$

are the discontinuous component of the discrete cosine transform coefficients of the first

and second pixels, c_2 and c_3 are DCT kernel coefficients and QP is a quantization

parameter of a macroblock containing v_4.

18. The method according to claim 15, wherein the default mode and the DC

offset mode are selected based on a smoothness level of at least the block boundary.

19. The method according to claim 18, wherein the adjusting steps in the DC offset mode are:

$$v_3' = v_3 - d;$$

$$v_4' = v_4 + d;$$

$$v_2' = v_2 - d_2;$$

$$v_5' = v_5 + d_2;$$

$$v_1' = v_1 - d_3; \text{ and}$$

$$v_6' = v_6 + d_3, \text{ where } d_1 = (3(v_3 - v_4)//8)*\delta(|a_{3,0}|\langle QP\rangle),$$

$$d_2 = (3(v_3 - v_4)//16)*\delta(|a_{3,0}|\langle QP\rangle), \text{ and}$$

$$d_3 = (3(v_3 - v_4)//32)*\delta(|a_{3,0}|\langle QP\rangle), \text{ wherein } v_0 - v_7 \text{ are}$$

initial boundary pixel values, $v_1' - v_6'$ are adjusted boundary pixel values, $a_{3,0}$ is the discontinuous component of the discrete cosine transform coefficients of the first pixel and QP is a quantization parameter of a macroblock containing v_4.

20. The method according to claim 15, wherein discrete cosine transform coefficients are determined by an inner product of a discrete cosine transform kernel and the pixels.

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